



# Forest Health Protection

## Pacific Southwest Region



Date: January 19, 2018  
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**To:** Teri Simon-Jackson, acting-Forest Supervisor, Shasta-Trinity National Forest

**Subject:** Dubakella Plantations Project

At the request of Leslie Warta, a site visit was made to the Dubakella Plantations project area on December 12, 2017, where there is a proposal to treat approximately 3,000 acres of ponderosa pine plantations. The objectives were to assess the current stand conditions for insect and disease activity. Leslie Warta (Shasta-Trinity NF), Pete Angwin, and Cynthia Snyder (FHP) attended.

### **Background**

The Dubakella Plantations are approximately 3,600 acres of 25-60 year old ponderosa pine and mixed conifer plantations approximately 5 miles southwest of Wildwood, within the Dubakella watershed, Hayfork District, Shasta-Trinity NF. The Dubakella project removes the plantations burned in 2008 and 2013 and others that lie within riparian reserves to reach the 3,000 acre limit for the 2014 Farm Bill CE authority being used.

2016 Aerial Survey data (2016 ADS) show mortality occurring at levels of approximately one tree per acre in ponderosa and Jeffrey pine and white fir through much of the project area (Figure 1). This mortality started in the 2015 during the height of the extended drought and continues in dry, rocky sites and in areas with extensive top breakage due to 2016 winter storms. The storm damage affects the entire Dubkella watershed but is more evident in the overstocked plantations established in 1959 following the 5,000 acre Jones Fire. Salvage and rehabilitation following the fire created 41 plantations totaling over 300 acres. Timber sales in the 1970's and 1980's created another 215 acres of plantations in the same area.

Currently, the plantations range from 100 to 1,264 trees per acre with an average of 503 trees per acre. Conifer mortality has been noted in trees ranging in size from saplings, in the harshest sites, to mature sawtimber. Much of the mortality is centered on very dry, rocky sites and areas of pronounced storm damage.

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**Figure 1.** 2016 ADS showing 1 tree per acre mortality in ponderosa pine, Jeffrey pine, and white fir.

### Observations

Five stands were visited on December 12. The first was a 32-year old pine plantation (Dubakella Mountain #8 and #9) where western pine beetle (*Dendroctonus brevicomis*) is causing mortality in ponderosa pine in groups of 3-12 trees (Figure 2).

The summer of 2017 brought extraordinary heat to California. Many daily and monthly temperature records were set statewide. State-wide overnight temperatures stayed well above average daytime highs in many places, and new all-time “warmest minimum” records were set. In fact, 2017 broke (by a considerable margin) the previous record set in 2016 increasing a sustained, long-term warming trend over the past century in California. In addition to the heat, there was little to no precipitation from June through October. This extreme, dry heat added to moisture stress that was present in these dry sites.



**Figure 2. Dry site along rocky opening showing western pine beetle-caused mortality in ponderosa pine.**

Other sites with mortality were highly disturbed, dry sites like Mr. Jones plantations (Mr. Jones #8) where groups of 20 or more trees, even smaller diameter trees (<3 inches dbh), were being attacked and killed (Figure 3).

There was a dramatic amount of top breakage in ponderosa and Jeffrey pine with resulting western bark beetle infestation in the ponderosa pine (Figure 4). Storm damage was found in many of the overstocked stands within the entire watershed, but especially concentrated in the area affected by the 1959 Jones Fire Jones that burned 5,000 acres. North facing draws seemed to be most affected but top-breakage was found on all aspects.

The desired density for the plantations was expressed as approximately 100 trees per acre. Younger and/or more diverse plantations would be kept at a higher density, while older plantations will be thinned to greater spacing. However, cleaning up the units (i.e. removing the blowdown and cutting the broken top trees) may result in openings/gaps and stocking levels much lower than 100 TPA in some plantations.



**Figure 3. Ponderosa pine mortality around rocky, highly disturbed site.**



**Figure 4. Top breakage in overly dense ponderosa and Jeffery pine plantations resulting in western pine beetle attacks to both affected and non-affected ponderosa pine.**

## **Discussion**

The area is at risk of continued western pine beetle-caused mortality in ponderosa pine due primarily to overstocking. As with most bark beetles, the most economical and efficient means of management is to maintain trees and stands in a healthy condition. Stocking reduction and creation of diverse stand conditions reduce overall susceptibility to western pine beetle. The reduction to 100 trees per acre will provide greater stand resilience to western pine beetle attack in these plantations. Clean-up and removal of the large diameter broken tops and stems in the areas affected by storm damage is advised to reduce the risk of Ips causing mortality and further topkill in the residual trees in the storm damaged plantations.

If you have any questions regarding this report and/or need additional information, please contact Cynthia Snyder at 530-226-2437 or Pete Angwin at 530-226-2436.

/s/ Cynthia Snyder

CC: Leslie Warta, Chris Losi, Sheri Smith, Phil Cannon, Danny Cluck, Sherry Hazlehurst, and Pete Angwin